Summary:

A total of 221 stool samples were collected from children suffering from watery diarrhea, less than 15 years old of both genders whom admitted to the Maternity and Children Teaching Hospital in Al- Diwania Province, in addition to that, 27 water samples were also collected from three different loci of AL- Diwaniya River, at the period of October 2008 to June 2009, in order to evaluate the routine laboratory diagnostic procedures in the diagnosis the multi-serogroups or serotype of *Vibrio cholerae* strains and compared them with molecular technique as Polymerase chain reaction (PCR).

For phenotypic characterization, *Vibrio cholerae* has been isolated and identified by using cultural method in addition to biochemical tests, API 20E diagnostic kit. Serotyping by using polyvalent *Vibrio cholerae* O1antisera and monovalent Ogawa and Inaba revealed that the most of clinical *V. cholerae* were of serogroup O1, while the *V. cholerae* isolated from surface water of AL- Diwanyia river was Non-O1 serogroup.

PCR technique was used to detect *ompW* gene encoding to outer membrane protein of *V. cholerae*. Based on the (PCR) results, the rate of *Vibrio cholerae* isolation from stool samples was 13 (5.9%) while in water was 4 (14.8%). The results of this study also revealed that all strands of DNA which resulted from the binding between specific primers and positive extracted DNA of isolates appear as single band with 588 bp under the U.V light using ethidum bromide as a specific DNA stain in addition to band with the 650 pb work as Internal Positive Control (IPC). PCR results showed that there were high specificity (100%, 100%, 97% and 86%) in detection of *Vibrio cholerae* strains versus each of cultural, biochemical, API 20E system and serological tests respectively.

The sensitivity of *V. cholerae* isolates (either isolated from stool or water samples) against different antibiotics were tested; all isolates were 100% sensitive to ciprofloxacin, norfloxacin and gentamycin. While the isolates were 100% resistant to ampicillin and nalidixic acid. Also, the isolates revealed different rates of their sensitivity and resistance to other tested antibiotics.

Based on the testing of some of virulence factors of *V. cholerae*, the results showed that the enzymatic activity of 7 (70%) of isolates was positive for protease production and 10 (100%) for phospholipase production while 3 (30%) for lipase production.

The results of acidic tolerance test revealed that two isolates (28.6%) of Ogawa serotype and one isolate (33.3%) of non- O1 serogroup of *V. cholerae* isolates had ability to grow in 4.5 pH value and these isolates revealed different rates of their growth according to the pH values that used.

Additionaly, this study showed that one isolate (33.3%) of non- O1 serotype of *V. cholerae* isolates had ability to grow in 10% of NaCl concentration and revealed different rates of their growth according to the NaCl concentrations that used.